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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,123	01/28/2004	Pierre Holzschuh	0514-1105-1	2245

466 7590 01/18/2008  
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EXAMINER

MAHAFKEY, KELLY J

ART UNIT	PAPER NUMBER
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1794

MAIL DATE	DELIVERY MODE
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01/18/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/765,123	<b>Applicant(s)</b> HOLZSCHUH ET AL.	
	<b>Examiner</b> Kelly Mahafkey	<b>Art Unit</b> 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10/29/07 & 10/30/07.  
 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-15 and 17-24 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
 6) ☒ Claim(s) 1,2,4-15 and 17-24 is/are rejected.  
 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) ☐ All b) ☐ Some \* c) ☐ None of:  
 1. ☐ Certified copies of the priority documents have been received.  
 2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

Amendments made 10/29/07 and 10/30/07 have been entered.

Claims 1,2, 4-15, and 17-24 are pending.

### ***Specification***

The objection to the specification has been withdrawn in light of applicant's amendments made 10/29/07.

### ***35 USC § 112 Claim Rejections***

The 112 second paragraph rejection of claims 1, 2, 4-15, 17, and 18 has been withdrawn in light of applicant's amendments made 10/29/07 and 10/30/07. The following 112 rejections are pending.

Claim 21 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 21 recites, "wherein the produced smoke is condensed... in a suitable condensation device." It is unclear as to what condensation devices are "suitable" and to which condensation devices are "unsuitable" and to who determines such standards.

### ***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 2, 4, 6-15, 18-21, 23, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Underwood et al (US 4876108) in view of the combination of Lepez (FR 2775621) as translated by the USPTO July 2007 and Weissman (US 3012124).

Underwood disclose an aqueous wood smoke solution for flavoring foodstuffs, wherein the smoke was produced by heating in an oxygen starved atmosphere ground wood or cellulose to between 400°C and 650°C and separating and collecting the wood

charcoal, sand, and water soluble liquid products (Abstract and Column 11 lines 53-65). Underwood discloses that wood is commonly dried and fed to a reactor system (Column 1 lines 52-56). Underwood discloses a benzo[a]pyrene content of between 5 and 50ppb (Column 5 lines 32-33) and that levels below 0.5ppb can be achieved (Column 5 lines 50-51). Underwood teaches that pyrolysis controls in a controlled gas environment (abstract), thus teaching of a pyrolysis reactor which comprises a substantially hermitically sealed heatable chamber. Underwood teaches that the pyrolysis reactor includes a heating and mixing device wherein the heat is provided from an external source (Column 8 lines 3-28 and Figure 1 items 1 and 10). Underwood teaches that the wood material is dried by heating, i.e. preheating, prior to being hydrolyzed (Column 11 lines 25-40). Underwood teaches that the product smoke is condensed at the outlet of the reactor in a condensation device (Column 9 line 34 and Figure 1 item #25).

Underwood, however, is silent to a rotatable heated endless screw comprising a heating device as recited in claims 1, 10, 18, and 19, to precise control of the environmental factors, including oxygen and temperature control, when the pyrolysis takes place as recited in claims 6, 7, and 23 and to a benzoanthracene content of 20ppb or less as recited in claims 13 and 19.

Lepez teaches of an improved thermal device and mixing apparatus. Lepez teaches that the combined device eliminates the need for an onerous bulky system. Refer specifically to Translation Page 2 Paragraphs 1 and 3. Lepez teaches that the heating device is comprised of the mixing member in contact with which the products for the most part of the mixing process and all or nearly all of the products will be heated directly in contact with the heating device (Page 5 paragraph 2). Lepez teaches that the mixer is comprised of electrically conducting material and an electric current is brought from a supply source to the mixing member causing heating by the Joule effect (Page 8 Paragraph 1, Page 9 All, and Figures 1 and 2 items 5.1 and 5.3).

Weissman teaches a smoke generator for generating smoke from hard wood chips. It includes a trough of arcuate form having a charging end into which wood chips are fed and a discharging end from which the chip residue is discharged. The trough is

heated by electrical resistance elements and an archimedean screw is supported rotatably within the trough to advance wood chips from the charging end to the discharging end. This arrangement increases the operating efficiency of the smoke generator (Column 1 lines 8-25). Weissman teaches that a trough of arcuate form having a charging end into which wood chips are fed and a discharging end from which the chip residue is discharged.

Regarding a rotatable heated endless screw which comprising a heating device, such as an electrical heating device that passes electric current through the screw, it would have been obvious to one of ordinary skill in the art to utilize a rotatable heated endless screw, for mixing in a pyrolysis process as taught by Weissman. One would have been motivated to do so because the screw systems provides increased operating efficiency as taught by Weissman. It would have been further obvious to one of ordinary skill in the art to utilize a rotatable heated endless screw comprising an electrical heating device that passes electric current through the screw as taught by Lepez. One would have been motivated to do so because the heated screw systems provides for a less bulky and less onerous system as taught by Lepez.

Regarding precise control of the environmental factors, including oxygen and temperature control, when the pyrolysis takes place, it would be obvious to one of ordinary skill in the art at the time the invention was made to maintain precise environmental control during the pyrolysis reaction, including precise control over the gas environment and temperature, in order to optimize the process and produce a suitable liquid product. One would have been further motivated to do so to prevent adverse reactions, such as the formation of excess carcinogenic materials or to prevent combustion of the wood particles while heated to elevated temperature.

Regarding a benzoanthracene content of 20ppb or less, benzoanthracene was a well-known carcinogen to humans; Underwood teaches of diluting the final condensed product so that it contains less than the accepted levels of known carcinogenic (Column 9 lines 12-13); thus it would be obvious to one of ordinary skill in the art to expect a low content as recited by applicant.

Claims 5 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Underwood et al (US 4876108) in view of the combination of Lepez (FR 2775621) as translated by the USPTO July 2007 and Weissman (US 3012124) further in view of Wistreich et al (US 3875314).

Underwood teaches of a pyrolysis method in which the pyrolysis gas is condensed in a condensation device as discussed above, however, is silent to re-injecting the condensed gas back into the reactor as recited in claims 5 and 22.

Wistreich et al teach a liquid smoke and method for manufacture comprising feeding hardwood such as sawdust in the form of a vibratory conveyor for advancement of the material through an enclosed space heated to a temperature sufficient to cause thermal destruction or degradation of the wood particles. The bottom side of the plate is heated directly or indirectly to an elevated temperature of about 600°C to 750°C for transmission of heat sufficient to cause carbonization of the wood particles from the feed end to the delivery end, after which the burned or charred wood particles fall from the conveyor for disposal (Column 2 lines 37-52). In addition, Wistreich et al teach that the fumes, vapors and smoke particles which are given off by the thermal reduction of wood particles are exhausted from the chamber through an outlet for passage into a condensate chamber (Column 2 lines 56-60). Wistreich et al teach that it is desirable to mount the condenser in communication with and preferably at the top of the reactor for continuous flow of vapors and gases exhausted from the top of the reactor to the inlet at the bottom of the condenser in order to enhance yield of materials extracted (Column 3 lines 26-43).

Regarding re-injecting pyrolysis gas into the reactor, it would be obvious to one of ordinary skill in the art to modify Underwood by recirculating the vapors and gases in order to enhance yield as taught by Wistreich.

Claims 1, 17, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gruhl (US 4992404) and Lepez (FR 2775621) as translated by the USPTO July 2007.

Gruhl teaches a pyrolysis process of an organic material with a screw conveyor at a temperature of 200-800C. Gruhl teaches of removing the volatile products (i.e. smoke products) and the organic residue. Refer specifically to Column 2 lines 8-36.

Gruhl, however, is silent to the pyrolysis reactor or the screw conveyor as substantially hermetically sealed as recited in claims 1, 17, 18, and 19 and to the screw conveyor as a rotatable heated endless screw comprising a heating device as recited in claims 1, 17, 18, and 19.

Lepez teaches of an improved thermal device and mixing apparatus. Lepez teaches that the combined device eliminates the need for an onerous bulky system. Refer specifically to Translation Page 2 Paragraphs 1 and 3. Lepez teaches that the heating device is comprised of the mixing member in contact with which the products for the most part of the mixing process and all or nearly all of the products will be heated directly in contact with the heating device (Page 5 paragraph 2). Lepez teaches that the mixer is comprised of electrically conducting material and an electric current is brought from a supply source to the mixing member causing heating by the Joule effect (Page 8 Paragraph 1, Page 9 All, and Figures 1 and 2 items 5.1 and 5.3).

Regarding the pyrolysis reactor as substantially hermetically sealed, Gruhl teaches that the heating of the organic material forms volatile products. It would have been obvious to one of ordinary skill in the art at the time the invention was made to substantially hermetically seal the pyrolysis reactor or the screw conveyor in order to prevent the escape of the volatile products formed during the heating process.

Regarding a rotatable heated endless screw which comprising a heating device, such as an electrical heating device that passes electric current through the screw, it would have been obvious to one of ordinary skill in the art to utilize a rotatable heated endless screw comprising an electrical heating device that passes electric current through the screw, in the pyrolysis process. One would have been motivated to do so

because the heated screw systems provides for a less bulky and less onerous system as taught by Lepez.

The 103(a) rejection of claims 1, 2, 4-15, 17, and 18 over Holzschuh (US 2004/0096568 A1) has been withdrawn in light of applicant's arguments (Remarks Page 14 paragraphs 5 and 6) made 10/29/07.

### ***Double Patenting***

The provisional non-statutory obviousness-type double patenting rejection of claims 1-16 as being unpatentable over claims 17-34 of copending Application No. 10/612972, as amended 6/20/06 in view of Weissman (US 3012124) has been withdrawn in light of applicant's amendments and arguments (Remarks page 16 paragraph 2) made 10/29/07.

### ***Response to 103 Arguments***

Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection. Applicant's arguments are in regards to the heated rotatable screw with a heating device, such newly added limitations have been addressed in the rejection above.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kelly Mahafkey whose telephone number is (571) 272-2739. The examiner can normally be reached on Monday through Friday 8am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Keith Hendricks can be reached on (571) 272-1401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Lien Tran/  
Primary Examiner  
Group 1700

Kelly Mahafkey  
Examiner  
Art Unit 1794

A handwritten signature in black ink, appearing to be 'K. Mahafkey', with a large, sweeping loop at the end.